is received by the USB controller/transceiver **202'** coupled to the remote system or unit **225** via an appropriate one of the communication paths $\mathbf{215}_1$-$\mathbf{215}_M$. Thereafter at steps **1256**-**1258**, the DSP **224** polls the USB controller/transceiver **202'** for new data in a continuous polling cycle. During each cycle, any new raw data is read and stored in a data memory at step **1260**, which may be either associated with DSP **224**, auxiliary memory unit **244** or other external memory. Alternatively, DSP **224** may wait and respond as just described at step **1260** to an interrupt generated by the USB controller/transceiver **202'** when data is received thereby. In any case, both polling software and interrupt handlers are well known in the art, and those skilled in the art will recognize that either method could be implemented without departing from the scope of the invention.

[0251] Thereafter at step **1262**, DSP **224** assembles any data frames received from the USB controller/transceiver **202'** into messages, and at step **1264** DSP **224** determines whether any of the messages are bound for transmission to either the J1708 vehicle communications network or the J1939 vehicle communications network. Any messages bound for neither vehicle communications network are discarded at step **1266**. For any message bound for either the J1708 or J1939 vehicle communications network, DSP **224** is operable following step **1264** to reformat any such messages into appropriate data packets with addresses at step **1268**. Messages bound for the J1708 vehicle communication network are reformatted by DSP **224** according to the SAE J1587 communications protocol, and any messages bound for the J1939 vehicle communications network are reformatted by DSP **224** according to the SAE J1939 communications protocol.

[0252] Following step **1268**, the process advances to step **1270** where DSP **224** sends the reformatted data packets to an appropriate interface port. Those packets bound for the J1708 vehicle communications network are sent by DSP **224** to its J1587 SCI, and those packets bound for the J1939 vehicle communications network are sent by DSP **224** to its CAN controller. Thereafter at step **1272**, DSP **224** sends the reformatted data packets to an appropriate transceiver for transmission to a corresponding one of the vehicle communication networks. Those packets bound for the J1708 vehicle communications network are sent by DSP **224** to the J1708/RS-485 transceiver **216**, and those packets bound for the J1939 vehicle communications network are sent by DSP **224** to the CAN transceiver **214**. Thereafter at step **1274**, the transceivers **216** and/or **214** are operable to transmit the data provided to them by DSP **224** to one or more of the control computers carried by the vehicle **100** and coupled to either or both of the vehicle communications networks. For example, the J1708/RS-485 transceiver **216** is coupled to the J1708 vehicle communications link $\mathbf{108}_1$ via communications link $\mathbf{120}_1$, and the J1708/RS-485 transceiver **216** is operable at step **1274** to transmit the data supplied thereto by DSP **224**, which data is configured for communications according to the SAE J1587 communications protocol, to any one or more in-vehicle control computers coupled to the J1708 vehicle communications network $\mathbf{108}_1$. Likewise, the CAN transceiver **214** is coupled to the J1939 vehicle communications link $\mathbf{108}_N$ via communications link $\mathbf{120}_N$, and the CAN transceiver **214** is operable at step **1274** to transmit the data supplied thereto by DSP **224**, which data is configured for communications according to the SAE J1939 communications protocol, to any one or more in-vehicle control computers coupled to the J1939 vehicle communications network $\mathbf{108}_N$. The process advances from step **1274** or from step **1266** to step **1276** where the process ends, and then returns to the "start" step **1252**.

[0253] The illustrative embodiments described herein are exemplary, and are not intended to limit the claimed invention in any way. Although certain applications are described as specifically well suited for use with the current invention, it is believed to be useful in other applications as well. In fact, there are few, if any, internal combustion engine applications in which the present invention would not offer some benefit. Engine and engine controller manufacturers may choose to include the present invention in all engines, irrespective of the application.

What is claimed is:

1. A communications bridge between a communications network carried by a motor vehicle and configured for communications according to a first protocol and a remote system configured for communications according to a second protocol, the communications bridge comprising:

a first interface configured for coupling to said communications network;

a second interface configured for coupling to said remote system; and

a digital signal processor (DSP) configured to process multiple operations per instruction cycle, said DSP receiving information configured according to said first protocol from said communications network via said first interface, converting said information received from said communications network and configured according to said first protocol to said second protocol and transmitting said information converted to said second protocol to said remote system via said second interface, said DSP receiving information configured according to said second protocol from said remote system via said second interface, converting said information received from said remote system and configured according to said second protocol to said first protocol and transmitting said information converted to said first protocol to said communications network via said first interface.

2. The communications bridge of claim 1 further including a control computer carried by said motor vehicle and connected in communication with said communications network, said control computer providing said information configured according to said first protocol to said communications network.

3. The communications bridge of claim 1 wherein said communications network carried by said motor vehicle is a Society of Automotive Engineers (SAE) J1708 hardware network;

and wherein said first protocol is an SAE J1587 communications protocol configured for communication over said SAE J1708 hardware network.

4. The communications bridge of claim 3 wherein said first interface is a first transceiver configured for coupling to said SAE J1708 hardware network, said first transceiver operable to transmit and receive said information configured according to said SAE J1587 communications protocol to and from said SAE J1708 hardware network.